



NTNU – Trondheim Norwegian University of Science and Technology

PhD scholarship on “*Particle transport and clustering in stratified turbulent flows*” funded by the Research Council of Norway

The aim of the research program is generic in the sense that we wish to study the mechanisms involved when both temperature gradients and turbulence are present in a particle-laden fluid flow. The focus will be on particle impaction on solid objects in a cross flow. The important mechanisms related to particle transport and impaction includes thermophoresis, turbophoresis, Brownian diffusion, and the phenomenon of turbulent thermal diffusion (TTD). The research work will focus both on computer simulations (Direct Numerical Simulations) and on modelling of the particle-embedded fluid-solid interfaces.

The research has practical relevance in particular for the utilization of biomass and waste for power production in thermal power plants. Additionally, there will also be a coupling between this work and raindrop formation in clouds and planet formation in the solar nebula.

The research project comprises two PhD students, one based at NTNU in Trondheim and the other at NORDITA in Stockholm. The NTNU-based PhD student will be supervised jointly by Dr Nils Erland Haugen and Prof Helge I. Andersson. The research work will be coordinated with that of the NORDITA-based PhD student and the two other supervisors.

The vacant scholarship is for a new PhD student and is funded by The Research Council of Norway. The PhD grant offered amounts to about 420 000 NOK (~ €50 000) per year (before tax). The scholarship is for a period of three years (four years if teaching duties included).

The applicant should hold a master degree in physics or engineering sciences and qualify for enrolment in the PhD program at NTNU. Motivation for fundamental scientific research of practical relevance is essential. Genuine interest in flow physics, mathematical modeling, and computer simulations is a prerequisite.

Preliminary brief applications should be submitted before ***April 3rd 2014***. A CV with an indication of the average grade performance suffices. No transcripts of exam documents etc are required at this stage. After a pre-qualification, a small group of applicants will be invited to submit a formal application with certified copies of all relevant documents.

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